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The Mammals of Caprock Canyons State Park, Texas

Clyde Jones, Franklin D. Yancey, II, and Richard W. Manning

Abstract

During a baseline survey of the mammals of Caprock Canyons State Park (CCSP), Texas (including the annexed trailway), 36 species of mammals were documented to occur within the boundaries of the park. These species represent eight mammalian orders and 20 families. Accounts of species are presented for each of these 36 mammals, and include information on distribution, relative abundance, habitat preference, and reproductive biology, as well as the subspecies that occur at CCSP. Localities are listed as UTM coordinates for all specimens captured in the park, and additional specimens examined are listed where applicable. In addition to the mammals verified to occur within CCSP, 29 species are known to occur in close proximity. For each of these species, the likelihood of its occurrence in the park is discussed.

Key words: Caprock Canyons State Park, Caprock Canyons Trailway, mammals, Texas

Introduction

In 1975, the Texas Parks and Wildlife Department (TPWD) purchased land in the Panhandle of Texas in order to form Caprock Canyons State Park (CCSP). In the century that preceded acquisition by TPWD, much of the natural flora and fauna was altered by livestock grazing and other ranching practices. However, in recent years TPWD officials have been involved in efforts to return the park to its natural conditions (Toney 1992). Consequently, a thorough study of the mammalian diversity within the park was warranted.

In 1992, TPWD acquired additional property adjacent to CCSP. This land formerly belonged to the Fort Worth and Denver South Plains Railway Company. The railroad was built as a link between the South Plains and East Texas (Jeter 1949); final completion of the project from Estelline, Texas, to South Plains, Texas, resulted in approximately 100 km of railway that included two tunnels. The railroad continued to operate trains along the tracks until 1992.

At that time, the railway was designated as a trailway by TPWD, and subsequently included as a component of CCSP. Except for maintenance, repairs, and slight modifications to the railroad, the trailway has remained virtually untouched for the last 65 years. Currently, the trailway is open to the public for hiking, biking, and horseback riding. A study of the mammals of the CCSP trailway presented an opportunity to evaluate the fauna of this area.

DESCRIPTION OF THE AREA

Caprock Canyons State Park is located in the Panhandle of Texas. The park is divided into two core sections: the main park and the trailway. The main park is located in Briscoe County, whereas the trailway extends from South Plains (Floyd County) east through Quitaque (Briscoe County) and ends in Estelline (Hall County). The main park is approximately 5,260 ha, and the trailway extends for about 100 km.

Caprock Canyons State Park is one of the largest state parks in Texas (Miller 1984; Toney 1992). Two major canyons are located within the park. Both are approximately 3.2 km long and up to 183 m deep. Lake Theo is located in the western portion of the park and serves as a permanent water source (Toney 1992). Numerous temporary water sources, such as streams and ponds, can be found throughout the park during late spring and early summer. The trailway, which is a segment of the former Fort Worth and Denver Railroad, acts as a corridor between the High Plains and the Rolling Plains of Texas (Flores 1990; Toney 1992). A right-of-way of approximately 30 m exists on each side of the grade. The area outside of this grade is used by private landowners for grazing animals and/or farming. Quitaque Creek and a section of the Red River are the two primary sources of water found along the trailway. In addition, numerous temporary ponds form along the sides of the trailway following heavy rains.

The weather in this region of Texas is highly variable. The temperature ranges from below -17°C during the winter to above 37°C in the summer. Heavy rains occur during the late spring and early summer. Precipitation levels may reach 75–125 mm in some areas of the park during these storms. During the spring, high winds (greater than 80 kph) and tornadoes are not uncommon.

On most of CCSP, especially in the western portions, the soils are moderately dark in color, although there is an indurate caliche horizon near the surface. This caliche layer is especially obvious in profiles of washes and road cuts. Soil is shallow on the upper slopes of the area, but deep soils are present on the plains and along some drainage systems. A detailed summary and map of major soil types on the adjacent Llano Estacado was provided by Choate (1997). There are bands of deep, sandy soils and almost pure sandy terraces at the eastern end of the trailway. It is possible that these areas of sandy soils may be expanding in the region because of the prevailing winds that occur there, as well as changes in land-use practices that result in increased erosion of the soils. Some detailed descriptions of the soils to the east of the study area in north-central Texas were presented by Dalquest and Horner (1984). In general, soils of the entire study area are well-drained, except for some poorly-drained soils in low areas and some playa-like lake regions.

A variety of potential habitats for mammals exist in both the main park and along the trailway. The physiographic features of the region provide for a wide variety of habitats for organisms to utilize, including grasslands, juniper breaks, wetlands, shinnery oak, and sand-sage communities.

Between 1981 and 1990, more than half a million people visited the park (Flores 1990). Numerous trails have been designed to allow individuals to explore the canyons of the park. Methods of locomotion on these trails include hiking, bike riding, and horseback riding. In the main park, developed and primitive campsites are available, as well as recreational-vehicle sites with hookups. In addition, an equestrian area is available. There are no designated campsites along the trailway, but parking areas, toilets, and sources of water have been installed. Many individuals enjoy fishing, boating, and swimming at Lake Theo.

MATERIALS AND METHODS

Extensive trapping was conducted in the main park and along the trailway from December 1995 to November 1997. Sampling occurred year round in order to monitor fluctuations in small mammal populations. Attempts were made to collect small mammals in all vegetational regions of the park. Reproductive

information was gathered in order to determine the reproductive status of the small mammals throughout the year.

Small mammals primarily were collected using Sherman livetraps. Traplines normally consisted of 40–50 Sherman traps baited with rolled oats and set approximately 8–10 m apart. These traplines were set approximately one hour before sundown and retrieved one hour after sunrise. Efforts resulted in approximately 2,100 trapnights throughout the course of this study. One trap set one day and retrieved the following day was considered to be one trapnight.

Mist nets were used to collect bats in various localities within the park, and gopher traps were set whenever gopher mounds were encountered. Animals found dead on the road were salvaged, as appropriate. On certain occasions, a small caliber firearm was used to obtain specimens. All visual observations of mammals were recorded in field notes. A follow-up trip to the study site was made in July of 2014 to ascertain recent changes to the park. During this trip, one species not detected during the previous field study period (*Cynomys ludovicianus*) was visually noted and is included in the following accounts of species.

All localities were recorded as Universe Transverse Mercator (UTM) coordinates obtained from a hand-held global positioning device. Specimens of mammals were collected and salvaged in accordance with scientific permits issued by TPWD. Specimens of mammals from the general area that are retained at various repositories also were examined, and are noted in the appropriate species accounts.

ACCOUNTS OF SPECIES

The following accounts are of species that have been documented to occur in CCSP. Information on distribution, habitat preference, and other small mammals collected with the mammal of interest, are presented as appropriate. Reproductive information is presented, and the subspecies of each mammal found at CCSP is given.

Specimens examined are listed for each species collected from CCSP, along with collection localities in UTM coordinates. Additional specimens from within and around CCSP that were examined in connection with this study are listed separately. Localities for these specimens, listed as additional records, are as they appear on museum labels of specimens. Linear measurements are given in millimeters; weights are in grams. Specimens collected are deposited in the Natural Science Research Laboratory at the Museum of Texas Tech University. The order of taxa, as well as the scientific and vernacular names listed, follow those of Bradley et al. (2014).

ORDER DIDELPHIMORPHIA
Family Didelphidae
***Didelphis virginiana* Kerr, 1792**
Virginia Opossum

Didelphis virginiana is found throughout most of the state, except for many of the xeric areas of West Texas (Schmidly 2004; Manning et al. 2008). The opossum generally prefers woodland habitats (Schmidly 1977; Goetze et al. 1996; Schmidly 2004). This species also is reported to inhabit areas that are closely associated with humans (Jones et al. 1988; Goetze et al. 1996). At CCSP, *D. virginiana* was captured in a riparian area primarily composed of the following vegetation: *Prosopis glandulosa*, *Bouteloua gracilis*, *B. curtipendula*, *Quercus* sp., *Yucca* sp., *Tridens* sp., and *Sporobolus* sp. Other small mammals collected with *D. virginiana* at CCSP include *Chaetodipus hispidus*, *Peromyscus leucopus*, *P. maniculatus*, and *Sigmodon hispidus*.

The reproductive cycle of *D. virginiana* begins in January or February and ends in June or July (McManus 1974; Schmidly 1983, 2004). Litter sizes vary, but may consist of up to 21 young (Schmidly 2004). Testicular measurements of a male collected in May from CCSP were 6x3. No reproductive information for females from CCSP was documented.

The subspecies of *D. virginiana* that occurs at CCSP is *D. v. virginiana* Kerr, 1792. External measurements of the opossum from CCSP are as follows: total length, 367; tail length, 150; hind foot length, 36; ear length from notch, 34; weight, 165.

Specimen examined (1).—Briscoe Co.: CCSP, UTM coordinates: 14 310669E 3805456N, 1.

ORDER CINGULATA
Family Dasypodidae
***Dasypus novemcinctus* Linnaeus, 1758**
Nine-banded Armadillo

Dasypus novemcinctus is distributed throughout Texas, except for portions of the Trans-Pecos and Panhandle (Schmidly 2004). However, numerous workers have noted the range expansion of this species northward and westward (Stangl et al. 1992; Jones et al. 1993; Schmidly 2004). This mammal is reported to prefer woodlands, savannas, and scrub areas, as well as soft-soiled, densely vegetated areas that are relatively close to water (Schmidly 1983, 2004; Dalquest and Horner 1984). *D. novemcinctus* is known from CCSP based upon a specimen taken in Hall County from an unknown habitat type.

The reproductive cycle of *D. novemcinctus* is complex. The breeding season begins at the end of July, and young are generally born in March. Implantation of the blastocyst is delayed for approximately four months, and litters consist of identical quadruplets (McBee and Baker 1982; Schmidly 1983, 2004; Storrs et al. 1989). No reproductive information for the armadillo specific to CCSP is available.

The subspecies of *D. novemcinctus* that occurs at CCSP is *D. n. mexicanus* Peters, 1864. No measurements for the armadillo from CCSP are available.

Specimens examined (1).—Hall Co.: CCSP, UTM coordinates: 14 330685E 3813228N, 1.

ORDER LAGOMORPHA
Family Leporidae
***Sylvilagus audubonii* (Baird, 1857)**
Desert Cottontail

Sylvilagus audubonii is found throughout upland habitats of the western half of Texas (Schmidly 2004). Although this cottontail is found in a variety of habitats (Schmidly 1977, 2004; Dalquest and Horner 1984), it generally prefers xeric, upland habitats (Choate 1997; Schmidly 2004). *S. audubonii* was not collected during this study, but was observed on numerous occasions along the west end of the trailway is grassy habitats.

The breeding season of Desert Cottontails in Texas usually begins in February (Chapman and Willner 1978; Schmidly 2004) and continues throughout most of the year (Dalquest and Horner 1984; Schmidly 2004). Several litters of one to six young are produced each year (Schmidly 2004). No reproductive data specific for CCSP are available.

The subspecies of *S. audubonii* that occurs at CCSP is *S. a. neomexicanus* Nelson, 1907. No measurements for the Desert Cottontail from CCSP are available.

Specimens examined (0).

***Sylvilagus floridanus* (J. A. Allen, 1890)**
Eastern Cottontail

Sylivilagus floridanus is found in the eastern three-fourths of Texas, as well as parts of the Trans-Pecos (Schmidly 2004). This cottontail can be found in a variety of habitats (Chapman et al. 1980), however, it prefers mesic areas or brushy thickets (Goetze et al. 1996; Choate 1997; Schmidly 2004). *S. floridanus* frequently was observed along the west end of the trailway at CCSP in grassy areas.

Breeding cycles of the Eastern Cottontail vary between and among populations from year-to-year

(Schmidly 1983). In Texas, multiple litters of one to eight young typically are produced annually (Schmidly 2004). No information on the reproductive biology of *S. floridanus* from CCSP is available.

The subspecies of *S. floridanus* that occurs at CCSP is *S. f. llanensis* Blair, 1938. No measurements for the Eastern Cottontail from CCSP are available.

Specimens examined (0).

ORDER SORICOMORPHA
Family Soricidae
***Cryptotis parva* (Say, 1823)**
Least Shrew

Cryptotis parva is found throughout eastern and central Texas, most of the Panhandle, and portions of south Texas (Schmidly 2004). The Least Shrew is reported to prefer mesic habitats (Jones et al. 1987a, 1988) and grasslands with loose or soft soils (Schmidly 2004). Schmidly (1983) reported that this species can be found in vacant lots, briar thickets, and alongside railways, highways, fence rows, and wooded areas. At CCSP, this species was captured in grasslands composed mostly of the following grasses: *Schizachyrium scoparium*, *Sporobolus cryptandrus*, *Calamovilfa gigantea*, *Aristida* sp., *Bouteloua* sp., and *Eragrostis* sp. Other small mammals collected with *C. parva* at CCSP include *Peromyscus leucopus* and *Sigmodon hispidus*.

The reproductive cycle of *C. parva* is not well-studied (Whitaker 1974). In Texas, this species generally breeds from March to November and produces two or more litters per year (Schmidly 2004). Litter size typically ranges from three to six young (Schmidly 2004).

The subspecies of *C. parva* that occurs at CCSP is *C. p. parva* (Say, 1823). External measurements of a single specimen from CCSP are as follows: total length, 73; tail length, 18; hind foot length, 11; weight, 3.

Specimens examined (1).—Hall Co.: CCSP, UTM coordinates: 14 332582E 3815970N, 1.

Additional records (1).—Floyd Co.: 2 mi. N South Plains, 1.

Family Talpidae
***Scalopus aquaticus* (Linnaeus, 1758)**
Eastern Mole

Scalopus aquaticus is distributed throughout the eastern two-thirds of the state, west along the Canadian River, possibly to the border of New Mexico, along the eastern edge of the Llano Estacado, and south to a relict population in Presidio County (Jones et al. 1988; Schmidly 2004). This species prefers areas of moist or sandy soils (Schmidly 1977, 1983, 2004; Jones et al. 1987a). The range of this small mammal is reported to expand and contract based upon precipitation levels (Jones et al. 1988). At CCSP, numerous mole runs were observed within the main park and along portions of the trail in areas where sandy soils prevailed.

Breeding activity of the Eastern Mole peaks during a 3–4 week period within the breeding season (Schmidly 2004). A single litter of two to five young is produced each year (Schmidly 1977, 1983, 2004; Yates and Schmidly 1978). No data regarding the reproductive biology of *S. aquaticus* from CCSP are available.

The subspecies of *Scalopus aquaticus* that occurs at CCSP is *S. a. aereus* (Bangs, 1896). No measurements for the Eastern Mole from CCSP are available.

Specimens examined (0).

ORDER CHIROPTERA
Family Molossidae
***Tadarida brasiliensis* (St. Hilaire, 1824)**
Brazilian Free-tailed Bat

Tadarida brasiliensis is distributed throughout Texas (Ammerman et al. 2012). This species generally is considered to be a seasonal migrant, except for those individuals inhabiting the eastern part of the state (Schmidly 2004; Ammerman et al. 2012). These bats primarily are considered cave dwellers, but also can be found roosting in buildings, bridges, rock crevices, and cliff swallow nests (Schmidly 1977, 2004; Wilkins 1989; Stangl et al. 1992; Yancey et al. 1996a; Ammerman et al. 2012). At CCSP, a large colony, estimated at between 50,000 and 500,000 individuals (depending on the time of year), inhabits the abandoned Clarity Tunnel that is built into a rock escarpment along the

trailway. See Roberts (1998) for a detailed depiction of the natural history of this bat colony.

Male Brazilian Free-tailed Bats are sexually active from February to April, and most females ovulate in March (Wilkins 1989; Ammerman et al. 2012). Parturition occurs most commonly in early to mid-June, when a single young is born (Ammerman et al. 2012). Two female bats collected 26 June carried one embryo each (crown-rump 28 and 31). Testicular measurements of six males examined for reproductive activity in June ranged from 3x2 to 4x2.

The subspecies of *T. brasiliensis* that occurs at CCSP is *T. b. mexicana* (Saussure, 1860). Mean external measurements (sample sizes and extremes in parentheses) for specimens from CCSP are as follows: total length, 94.6 (85, 83–102); tail length, 31.4 (85, 25–42); hind foot length, 9 (85, 7–12); ear length from notch, 14.2 (85, 10–19); weight, 8.8 (85, 5–15).

Specimens examined (87).—Floyd Co.: CCSP, UTM coordinates: 14 304470E 3790854N, 42.

Additional records (59).—Floyd Co.: 3 mi. N, 8 mi. E South Plains, 5; Briscoe Co.: 6.1 mi. N, 0.1 mi. W Quitaque, 18; Hall Co.: Memphis, First Presbyterian Church, 36.

Family Vespertilionidae

***Corynorhinus townsendii* Cooper, 1837**

Townsend's Big-eared Bat

Corynorhinus townsendii is found throughout the western one-half of Texas (Ammerman et al. 2012). It prefers broken, rocky habitat (Schmidly 1977; Ammerman et al. 2012), and therefore, this species commonly is captured in caves and mines (Schmidly 1977; Jones et al. 1987a; Goetze et al. 1996; Choate 1997; Ammerman et al. 2012). Accordingly, a single individual of this species was collected in a gypsum cave at CCSP. The surrounding area is sparsely vegetated with short grass clumps and juniper (*Juniperus* sp.)

Townsend's Big-eared Bats generally breed from November to February at winter roost sites (Kunz and Martin 1982; Ammerman et al. 2012). A single young is produced in late spring or early summer (Schmidly 1977; Kunz and Martin 1982; Ammerman et al. 2012). No reproductive information for females from CCSP is available. Testicular measurements of a male collected in July from CCSP were 8x4.

The subspecies of *C. townsendii* from CCSP is *C. t. pallescens* Miller, 1897. External measurements of a single specimen collected from CCSP are as follows: total length, 101; tail length, 52; hind foot length, 10; ear length from notch, 35; weight, 10.5.

Specimen examined (1).—Briscoe Co.: CCSP, UTM coordinates: 14 310118E 3812533N, 1.

***Eptesicus fuscus* (Palisot de Beauvois, 1796)**

Big Brown Bat

Eptesicus fuscus is known from eastern and western Texas (Ammerman et al. 2012). This bat generally prefers forested areas (Schmidly 1977, 1983; Dalquest and Horner 1984), although it may occur in deserts as well (Dalquest and Horner 1984; Yancey 1997). Although no specimens were collected at CCSP, this species was seen flying inside of Clarity Tunnel.

Mating generally occurs in the fall (Schmidly 2004; Ammerman et al. 2012). Each year one to two young are produced in late May or June depending upon geographic locality (Schmidly 1977, 1983; Dalquest and Horner 1984; Kurta and Baker 1990; Ammerman et al. 2012). No reproductive data for this species in CCSP are available.

The subspecies of *E. fuscus* that occurs at CCSP is *E. f. fuscus* (Palisot de Beauvois, 1796). No measurements for *E. fuscus* from CCSP are available.

Specimens examined (0).

Additional records (256).—Floyd Co.: 3 mi. N, 8 mi. E South Plains, 1; Briscoe Co.: 5 mi. SE Silverton, 1; Los Lingos Canyon, 8; 6.1 mi. N, 0.1 mi. W Quitaque 6; Hall Co.: Memphis, First Presbyterian Church, 240.

ORDER CARNIVORA
Family Canidae
***Canis latrans* Say, 1823**
Coyote

Canis latrans is found throughout Texas and is especially common in some areas (Schmidly 2004). This canid is adapted to a wide variety of habitats (Schmidly 1977, 2004; Jones et al. 1988), and they are active thoughout the year (Bekoff 1977). Coyotes are most active during nocturnal and crepuscular hours. *Canis latrans* is considered common at CCSP. These animals were heard frequently and signs of their presence (tracks, scat) often were observed.

Adult females give birth to a single litter a year (Bekoff 1977; Schmidly 2004). In general, litter sizes average four to six young (Bekoff 1977; Schmidly 1977; Dalquest and Horner 1984; Choate 1997). No information on the reproductive biology of this species from CCSP is available.

The subspecies of *C. latrans* that occurs at CCSP is *C. l. latrans* Say, 1823. No measurements from specimens from CCSP are available

Specimens examined (0).

Additional records (3).—Floyd Co.: 13 mi. N, 1 mi. W Crosbyton, Smith Farm, 2; 3 mi. N, 6 mi. E South Plains, 1.

Family Felidae
***Lynx rufus* Schreber, (1777)**
Bobcat

Lynx rufus is found throughout Texas (Schmidly 2004; Manning et al. 2008). Although Bobcats can be found in a variety of habitats (Schmidly 1977, 2004; Jones et al. 1988; Lariviere and Walton 1997), they prefer wooded or broken country (Cutter 1959; Schmidly 1977; Jones et al. 1987a, 1988; Goetze et al. 1996; Choate 1997). Bobcats were observed at dusk moving across the open prairies of CCSP and adjacent areas.

Generally, Bobcats begin to reproduce in February, and each year one to seven young are born (Schmidly 1977, 2004). No reproductive data for Bobcats from CCSP are available.

The subspecies of *Lynx rufus* at CCSP is *L. r. texensis* J. A. Allen, 1895. No measurements for specimens from CCSP are available.

Specimens examined (0).

Additional records (2).—Floyd Co.: 13 mi. N, 1 mi. W Crosbyton, Smith Farm, 2.

Family Mephitidae
***Mephitis mephitis* (Schreber, 1776)**
Striped Skunk

Mephitis mephitis is found throughout the state of Texas (Schmidly 2004; Manning et al. 2008). The Striped Skunk often is found in wooded brushy, as well as rocky areas, but is known from a variety of habitats (Schmidly 1983, 2004). At CCSP, *M. mephitis* was seen near areas of medium to tall grass and around buildings and structures.

The reproductive cycle of Striped Skunks generally begins in February or March and extends through the first half of May (Wade-Smith and Verts 1982; Schmidly 2004). Litter sizes consist of two to 10 young (Wade-Smith and Verts 1982; Schmidly 1983, 2004; Dalquest and Horner 1984). No reproductive information on these skunks from CCSP is available.

The subspecies of *M. mephitis* that occurs at CCSP is *M. m. varians* Gray, 1837. There are no measurements for specimens from CCSP.

Specimens examined (0).

Additional records (3).—Floyd Co.: 6 mi. S, 3 mi. E Floydada, 1; Briscoe Co.: 2 mi. N Quitaque, 1; Hall Co.: UTM coordinates 14 325368E 3801940N, 1.

Family Procyonidae
***Procyon lotor* (Linnaeus, 1758)**
Northern Raccoon

Procyon lotor is found throughout Texas (Schmidly 2004; Manning et al. 2008). This species generally prefers habitats that are closely associated with water (Schmidly 1977, 2004; Dalquest and Horner 1984; Jones et al. 1988; Yancey et al. 1996a; Choate

1997). In addition, these animals are often found living near human dwellings (Jones et al. 1987a,1988; Goetze et al. 1996). Raccoons were observed routinely at CCSP in the vicinity of streams and Lake Theo, as well as near campsites and around dumpsters.

Northern Raccoons breed from February to August, though most young are born in April or May (Lotze and Anderson 1979; Schmidly 1983).

The subspecies of *P. lotor* that occurs at CCSP is *P. l. fuscipes* Mearns, 1914. No measurements for Northern Raccoons from CCSP are available.

Specimens examined (0).

ORDER ARTIODACTYLA
Family Antilocapridae
***Antilocapra americana* (Ord, 1815)**
Pronghorn

Antiolocapra americana is found in portions of the Trans-Pecos, Edwards Plateau, and Panhandle regions of Texas (Schmidly 2004). These animals prefer open grasslands (O'Gara 1978; Jones et al. 1988). A small group of Pronghorns was observed at CCSP in open prairie land.

In Texas, Pronghorns breed from late August to the beginning of October (Schmidly 1977, 2004). Two young generally are born each year (Schmidly 1977; O'Gara 1978). No reproductive data on Pronghorns from CCSP are available

The subspecies of *A. americana* that probably occurs (based on geographic locality) at CCSP is *A. a. americana* (Ord, 1815). No measurements for Pronghorns from CCSP are available

Specimens examined (0).

Family Bovidae
***Ammotragus lervia* (Pallas, 1777)**
Barbary Sheep or Aoudad

Ammotragus lervia is native to North Africa and has been introduced into Texas (Gray and Simpson 1980; Schmidly 2004). Currently, *A. lervia* is distributed along the eastern edge of the Llano Estacado, as well as parts of the Trans-Pecos and Edwards Plateau regions of Texas (Schmidly 2004). The Barbary Sheep prefers dry, barren habitat (Schmidly 2004). It was seen on numerous occasions among the cliffs and canyons of CCSP.

Ammotragus lervia generally mates from mid-September to mid-November and gives birth to a single young from late February to early April (Schmidly 2004). No reproductive information specific to Aoudad from CCSP is available.

The subspecific status of the Aoudad from this area is unknown due to release and escape of captive animals of unknown origin(s). No measurements for this species from CCSP are available.

Specimens examined (0).

Additional records (1).—Briscoe Co.: 6 mi. N 4 mi. W Silverton, 1.

***Bos bison* (Linnaeus, 1758)**
American Bison

Bos bison once was widespread over the western two-thirds of Texas, but has been extirpated in the wild (Schmidly 2004). Some ranchers, however, maintain small herds on their lands (Schmidly 2004). This species prefers to inhabit grasslands (Meagher 1986). A herd of about 30 American Bison currently is maintained at CCSP. These gregarious animals are representatives of the bison that once ranged freely over this portion of Texas.

American Bison typically bear one calf each year, usually between mid-April and May (Dalquest and Horner 1984; Meagher 1986). Females are seasonally polyestrous (Meagher 1986). No information on the reproductive biology of the bison herd at CCSP is available.

The subspecies of *B. bison* that occurs at CCSP is *B. b. bison* (Linnaeus 1758). No measurements for this species from CCSP are available.

Specimens examined (0).

Family Cervidae
***Odocoileus hemionus* (Rafinesque, 1817)**
Mule Deer

Odocoileus hemionus is found within the Trans-Pecos and Panhandle regions of Texas and immediately adjacent areas to the east (Schmidly 2004). Though the mule deer can be found in a variety of habitats (Schmidly 1977; Yancey et al. 1996a), it prefers open, arid lands that are relatively rocky (Schmidly 2004). *O. hemionus* has been observed at CCSP in a variety of habitats and is considered to be abundant.

Reproductive activity of Mule Deer peaks from in late November to mid-December (Anderson and Wallmo 1984). In Texas, a single young is born between June and August (Schmidly 1977, 2004). No reproductive data specific to *O. hemionus* from CCSP are available.

The subspecies of *O. hemionus* that occurs at CCSP is *O. h. crooki* (Mearns, 1897). No measurements of Mule Deer from CCSP are available.

Specimens examined (0).

Additional records (1).—Hall Co.: 15 mi. NE Turkey, ½ mi. paved road, 1.

ORDER RODENTIA
Family Cricetidae
***Baiomys taylori* (Thomas, 1887)**
Northern Pygmy Mouse

Baiomys taylori is found throughout the eastern and central portions of Texas (Schmidly 2004). However, this diminutive mouse is expanding its range north and westward (Jones et al. 1988; Choate et al. 1990; Choate 1997; Schmidly 2004). Although, this mouse can be found in a variety of habitats (Eschelman and Cameron 1987), it prefers densely vegetated, grassy areas (Schmidly 1983, 2004; Dalquest and Horner 1984; Choate 1997). At CCSP, it was collected commonly in grassland areas composed mostly of *Schizachyrium scoparium*, *Andropogon geradii*, *Sporobolus cryptandrus*, *S. giganteus*, *Calamovilfa gigantea*, *Aristida* sp., and *Yucca* sp. Other small mammals collected with *B. taylori* at CCSP include: *Perognathus flavus*, *Chaetodipus hispidus*, *Reithrodontomys megalotis*, *R. montanus*, and *Sigmodon hispidus*.

Baiomys taylori breeds throughout the year under favorable conditions. Multiple litters of one to five young are produced each year (Schmidly 1983, 2004; Dalquest and Horner 1984; Eschelman and Cameron 1987). During this study, two gravid females from CCSP were examined. One, collected in May, carried two embryos (crown-rump length 2) and the other, collected in June, carried one embryo (crown-rump length 8). Testicular measurements of males collected from CCSP were: March, 2x2 to 5x3; May, 2x2; and June, 4x2 to 5x3.

The subspecies of *B. taylori* that occurs at CCSP is *B. t. taylori* (Thomas, 1887). Mean external measurements (sample sizes and extremes in parentheses) for specimens from CCSP are as follows: total length, 100.8 (9, 84–119); tail length, 36.0 (9, 18–42); hind foot length, 13.7 (9, 12–15); ear length from notch, 9.7 (9, 8–11); weight, 6.3 (9, 3.1–8.9).

Specimens examined (8).—Floyd Co.: CCSP, UTM coordinates: 14 304261E 3792048N, 1; CCSP, UTM coordinates: 14 307003E 3797530N, 1; Briscoe Co.: CCSP, UTM coordinates: 14 310626E 3810517N, 1; CCSP, UTM coordinates: 14 310978E 3812685N, 3; CCSP, UTM coordinates: 14 311150E 3809408N, 1; Hall Co.: CCSP, UTM coordinates: 14 347057E 3820539N, 1.

Additional records (5).—Floyd Co.: 6 mi. S Floydada, 3; 1.5 mi. N, 3 mi. E South Plains, 1; Hall Co.: 12 mi. W Lakeview, 1.

***Neotoma leucodon* Merriam, 1894**
White-toothed Woodrat

Neotoma leucodon is distributed throughout the Texas Panhandle south of the Red River, to the Hill Country, and westward through the southwestern portion of the state (Schmidly 2004). It can be found in a variety of habitats (Macedo and Mares 1988), but generally prefers desert shrub vegetation (Dalquest1968; Jones et al. 1988; Schmidly 2004). At CCSP, this species was collected in habitat primarily composed of the following vegetation: *Juniperus pinchotii*, *Quercus*

pungens, *Q. havardii*, *Bouteloua curtipendula*, *Aristida* sp., and *Tridens* sp. *Peromyscus attwateri* was collected with *N. leucodon* at CCSP.

Breeding periods of *N. leucodon* vary geographically (Macedo and Mares 1988). In Texas, the breeding season has been reported to occur from January to September (Schmidly 2004). Litter sizes vary from one to three young (Schmidly 1977, 2004; Dalquest and Horner 1984; Macedo and Mares 1988). One gravid female from CCSP, collected in April, carried two embryos (crown-rump length 41). Testicular measurements for males from CCSP were 15x6 in January and 14x6 in April.

Neotoma leucodon is considered monotypic. Average external measurements (sample sizes and extremes in parentheses) for specimens from CCSP are as follows: total length, 298.9 (8, 265–350); tail length, 124.4 (8, 108–148); hind foot length, 34.1 (8, 31–37); ear length from notch, 26 (8, 25–28); weight, 136.8 (8, 70–180).

Specimens examined (8).—Floyd Co.: CCSP, UTM coordinates: 14 302568E 3790061N, 1; CCSP, UTM coordinates: 14 302708E 3790061N, 3; CCSP, UTM coordinates: 14 302905E 3789750N, 2; CCSP, UTM coordinates: 14 304197E 3792070N, 1; CCSP, UTM coordinates: 14 307615E 3812830N, 1.

Additional records (8).—Floyd Co.: 1 mi. S, 6 mi. E South Plains, 3; 3 mi. N, 8 mi. E South Plains, 1; 4 mi. N, 8 mi. E South Plains, 1; Briscoe Co.: 9 mi. N South Plains, 1; Los Lingos Canyon, 2.

Neotoma micropus Baird, 1855
Southern Plains Woodrat

Neotoma micropus is found throughout the western two-thirds of the Texas, east to Johnson County in the north and the Gulf Coast in the south (Schmidly 2004). This woodrat generally prefers open, mesquite brushland areas (Dalquest and Horner 1984; Jones et al. 1987a, 1988; Schmidly 2004). At CCSP, this species was captured in grassland areas composed primarily of *Prosopis glandulosa*, *Schizachyrium scoparium*, *Sporobolus cryptandrus*, *Calamovilfa gigantea*, *Aristida* sp., *Bouteloua* sp., and *Eragrostis* sp. Other small mammals collected at CCSP with *N. micropus* include *Chaetodipus hispidus*, *Peromyscus maniculatus*, and *Sigmodon hispidus*.

The breeding season of *N. micropus* varies geographically (Braun and Mares 1989; Goetze et al. 1996). In Texas, the season usually begins in the early spring (Schmidly 1977, 2004; Dalquest and Horner 1984). One or two litters may be produced yearly (Goetze 1996; Schmidly 2004). Litter sizes consist of two to four young (Dalquest and Horner 1984; Braun and Mares 1989; Schmidly 2004). At CCSP, one pregnant female, collected in August, carried one embryo (crown-rump length 58). Testicular measurements of the male collected in August were 13x4.

The subspecies of *N. micropus* that occurs at CCSP is *N. m. canescens* J. A. Allen, 1891. Average external measurements (sample sizes and extremes in parentheses) for specimens from CCSP are as follows: total length, 320.6 (8, 299–334); tail length, 126.8 (8, 115–140); hind foot length, 37.8 (8, 35–40); ear length from notch, 25.6 (8, 24–27); weight, 194.8 (8, 130–255).

Specimens examined (8).—Briscoe Co.: CCSP, UTM coordinates: 14 310978E 3812685N,1; CCSP, UTM coordinates: 14 313905E 3807502N, 1; CCSP, UTM coordinates: 14 317055E 3828361N, 1; Hall Co.: CCSP, UTM coordinates: 14 329231E 3814281N, 1; CCSP, UTM coordinates: 14 352731E 3821611N,1; CCSP, UTM coordinates: 14 359238E 3823546N, 1; CCSP, UTM coordinates: 14 367816E 3824756N, 2.

Onychomys leucogaster (Wied-Neuweid, 1841)
Northern Grasshopper Mouse

Onychomys leucogaster is found throughout much of west and central Texas, as well as on the Rio Grande Plain (Schmidly 2004). It generally prefers grassy and weedy habitats (Schmidly 1977, 2004; Jones et al. 1988) with sandy substrata (Schmidly 1977, 2004; Dalquest and Horner 1984; Jones et al. 1988; Choate 1997). At CCSP, this species usually was captured in grassland areas composed mostly of *Schizachyrium scoparium*, *Sporobolus crytandrus*, *Calamovilfa gigantea*, *Aristida* sp., *Bouteloua* sp., and *Eragrostris* sp. Other small mammals collected with *O. leucogaster* at

CCSP include *Reithrodontomys megalotis* and *Peromyscus maniculatus*.

Onychomys leucogaster generally breeds in Texas from February to October (Schmidly 2004). However, this species may breed year-round (Dalquest and Horner 1984; Schmidly 2004), but produces few young in the winter and early spring (Dalquest and Horner 1984). Multiple litters of two to six young are produced each year (Schmidly 1977, 2004; McCarty 1978; Dalquest and Horner 1984). No reproductive information for females from CCSP is available. Testicular measurements of males collected from CCSP were 18x11.

The subspecies of *O. leucogaster* that occurs at CCSP is *O. l. articeps* Rhoads, 1898. Mean external measurements (sample sizes and extremes in parentheses) for specimens from CCSP are as follows: total length, 147.3 (4, 132–160); tail length, 39.8 (4, 35–44); hind foot length, 20.8 (4, 20–21); ear length from notch, 15.5 (4, 13–17); weight, 26.8 (4, 23–31).

Specimens examined (4).—Briscoe Co.: CCSP, UTM coordinates: 14 309371E 3802661N, 1; CCSP, UTM coordinates: 14 310211E 3804323N, 1; CCSP, UTM coordinates: 14 310836E 3809760N, 2.

***Peromyscus attwateri* J. A. Allen, 1893**
Texas Deermouse

Peromyscus attwateri is found throughout the central portion of Texas (Schmidly 2004). It is known to prefer rocky areas associated with juniper (Schmidly 1974; Dalquest and Horner 1984; Jones et al. 1987a; Goetze et al. 1996). It also is reported to inhabit open, grassy areas (Schmidly 2004). At CCSP, this species was collected generally in rocky areas composed mostly of the following vegetation: *Juniperus pinchotii*, *Ziziphus obtusifolia*, *Prosopis glandulosa*, *Dalea formosa*, *Bouteloua gracilis*, *Yucca* sp., *Tridens* sp., and *Sporobolus* sp. Other small mammals collected with *P. attwateri* at CCSP include *Neotoma leucodon*, *Reithrodontomys megalotis*, and *Peromyscus leucopus*.

Peromyscus attwateri breeds year round (Dalquest and Horner 1984). Litter sizes vary seasonally (Schmidly 1974), but generally consist of one to six young (Dalquest and Horner 1984; Schmidly 2004). All females collected from CCSP showed no evidence of reproductive activity. Testicular measurements of males collected from CCSP were as follows: January, 5x3; February, 10x5 to 10x6; March, 7x3; April, 7x3; July, 10x6; and December, 15x8.

Peromyscus attwateri is a monotypic species. Mean external measurements (sample sizes and extremes in parentheses) for specimens from CCSP are as follows: total length, 189.5 (19, 115–210); tail length, 97.1 (18, 85–110); hind foot length, 23.6 (19, 22–25); ear length from notch, 18.8 (19, 17–23); weight, 20.7 (19, 15–27).

Specimens examined (20).—Floyd Co.: CCSP, UTM coordinates: 14 295643E 3789251N, 4; CCSP, UTM coordinates; 14 302708E 3790061N, 1; CCSP, UTM coordinates: 14 302905E 3789750N, 1; CCSP, UTM coordinates: 14 303929E 3790498N, 6; CCSP, UTM coordinates: 14 304197E 3792070N, 1; Briscoe Co.: CCSP, UTM coordinates; 14 309911E 3812688N, 4; CCSP, UTM coordinates: 14 310978E 3812685N, 2; CCSP, UTM coordinates: 14 311350E 3811487N, 1.

Additional records (50).—Floyd Co.: 1 mi. S, 6 mi. E South Plains, 37; 4 mi. N, 8 mi. E South Plains, 2; Briscoe Co.: 6 mi. N 4 mi. W Silverton, 1; Los Lingos Canyon, 7; CCSP, 3 mi. N Quitaque, 2; 8 mi. N Quitaque, 1.

***Peromyscus leucopus* (Rafinesque, 1818)**
White-footed Deermouse

Peromyscus leucopus is found throughout Texas (Schmidly 2004). This deermouse may inhabit a wide array of habitats (Lackey et al. 1985; Jones et al. 1987a), but it generally prefers wooded areas (Schmidly 1983, 2004; Jones et al. 1988; Choate 1997). At CCSP, *P. leucopus* was captured in grassland areas composed mostly of the following grasses: *Andropogon gerardii*, *Panicum virgatum*, *Tripsacum dactyloides*, *Sorghastrum nutans*, and *Sporobolus airoides*. Other small mammals collected with *P. leucopus* at CCSP include: *Didelphis virginiana*, *Cryptotis parva*, *Perognathus flavus*, *Chaetodipus hispidus*, *Reithrodontomys megalotis*, *Peromyscus maniculatus*, *P. attwateri*, *P. truei*, *Baiomys taylori*, *Sigmodon hispidus*, and *Neotoma micropus*.

Peromyscus leucopus generally breeds throughout the year under favorable conditions (Schmidly 1983; Lackey et al. 1985; Choate 1997). Each year, multiple litters of one to six young are produced (Schmidly 1983, 2004; Dalquest and Horner 1984). However, Jones et al. (1988) reported a female carrying eight embryos. During this study, 36 females were examined for reproductive activity. Pregnant females were taken on the following dates: 29 February (3 embryos, crown-rump length 14); 29 March (2 embryos, crown-rump length 12; 3 embryos, crown-rump length 1); 14 May (4 embryos, crown-rump length 5; 4 embryos, crown-rump length 25; 4 embryos, crown-rump length 15); 25 July (4 embryos, crown-rump length 11); and 20 September (4 embryos, crown-rump length 14). Testicular measurements of males from CCSP were as follows: February, 5x3 to 14x10; March, 10x4 to 13x7; April, 3x2 to 12x7; May, 8x4 to 15x5; June, 2x1 to 8x4; July, 6x4 to 12x5; August, 10x4 to 12x5; and December, 12x7 to 14x6.

The subspecies of *P. leucopus* that occurs in CCSP is *P. l. tornillo* Mearns, 1896. Mean external measurements (sample sizes in parentheses) for specimens from CCSP are as follows: total length, 166.3 (86); tail length, 73.1 (85); hind foot length, 21.4 (86); ear length from notch, 15.4 (86); weight, 19.7 (86).

Specimens examined (86).—Floyd Co.: CCSP, UTM coordinates: 14 287174E 3789383N, 2; CCSP, UTM coordinates: 14 295643E 3789251N, 6; CCSP, UTM coordinates: 14 297852E 3789434N, 6; CCSP, UTM coordinates: 14 300479E 3790332N, 1; CCSP, UTM coordinates: 14 304470E 3790854N, 1; CCSP, UTM coordinates: 14 304503E 3790783N, 1; CCSP, UTM coordinates: 14 304554E 3791098N, 4; CCSP, UTM coordinates: 14 304588E 3791247N, 1; CCSP, UTM coordinates: 14 305151E 3793305N, 2; CCSP, UTM coordinates: 14 306939E 3797247N, 4; CCSP, UTM coordinates: 14 307003E 3797530N, 2; Briscoe Co.: CCSP, UTM coordinates: 14 307615E 3812830N, 1; CCSP, UTM coordinates: 14 308231E 3800150N, 3; CCSP, UTM coordinates: 14 308884E 3801479N, 1; CCSP, UTM coordinates: 14 310277E 3810567N, 3; CCSP, UTM coordinates: 14 310321E 3810652N, 2; CCSP, UTM coordinates: 14 310323E 3804721N, 1; CCSP, UTM coordinates: 14 310571E 3810499N, 1; CCSP, UTM coordinates: 14 310602E 3805181N, 1; CCSP, UTM coordinates: 14 310669E 3805456N, 9; CCSP, UTM coordinates: 14 310978E 3812685N, 1; CCSP, UTM coordinates: 14 311067E 2812579N, 1; CCSP, UTM coordinates: 14 313905E 3807502N, 3; CCSP, UTM coordinates: 14 314853E 3808126N, 1; CCSP, UTM coordinates: 14 317055E 3828361N, 1; Hall Co.: CCSP, UTM coordinates: 14 321822E 3808037N, 2; CCSP, UTM coordinates: 14 324316E 3807837N, 6; CCSP, UTM coordinates: 14 332582E 3815970N, 2; CCSP, UTM coordinates: 14 337754E 3817207N, 1; CCSP, UTM coordinates: 14 345566EC3820296N, 5; CCSP, UTM coordinates: 14 347057E 3820539N, 2; CCSP, UTM coordinates: 14 352731E 3821611N, 9.

Additional records (14).—Floyd Co.: 1 mi. S, 6 mi. E South Plains, 2; 13 mi. NE South Plains, 2; 8.5 mi. N, 4.5 mi. E South Plains, 5; 4.5 mi. N, 6 mi. W Silverton, 1; Los Lingos Canyon, 2; CCSP, 3 mi. N Quitaque, 2.

***Peromyscus maniculatus* (Wagner, 1845)**
North American Deermouse

Peromyscus maniculatus is distributed throughout Texas (Schmidly 2004). This species generally prefers areas of moderate vegetation, such as sparse grasslands (Schmidly 1977, 1983, 2004; Dalquest and Horner 1984; Goetze et al. 1996; Choate 1997). At CCSP this deermouse typically was taken in prairie grassland habitats dominated by *Bouteloua gracilis*, *Stipa leucotricha*, *Hilaria belangeri*, *Tridens nuticus*, *Aristida* sp., *Bothriochloa barbinodis*, *Schizachyrium scoparium*, and *Sorghastrum nutans*. Other small mammals collected with *P. maniculatus* at CCSP include: *Didelphis virginiana*, *Geomys bursarius*, *Chaetodipus hispidus*, *Reithrodontomys megalotis*, *Peromyscus leucopus*, *Onychomys leucogaster*, *Sigmodon hispidus*, *Neotoma micropus*, and *Mus musculus*.

Peromyscus maniculatus breeds year round, but reproduction reaches a peak from January through April and June through November (Schmidly 1977, 2004). Numerous litters of one to nine young may be produced each year (Schmidly 1983, 2004; Dalquest and Horner 1984; Goetze et al. 1996; Choate 1997). During this study, three pregnant females were collected. One mouse, collected in December, carried four embryos (crown-rump length 28), and two others, collected in

February, carried three embryos (crown-rump length 10) and five embryos (crown-rump length 25). One lactating female was examined in June. Testicular measurements of males from CCSP were as follows: January, 2x1 to 12x6; February, 9x5 to 20x8; April, 8x4; May, 10x5; June, 6x4 to 11x5; September, 10x4 to 13x5; October, 7x3; and November, 4x2 to 6x3.

The subspecies of *P. maniculatus* that occurs at CCSP is *P. m. luteus* Osgood, 1905. Mean external measurements (sample sizes in parentheses) of specimens from CCSP are as follows: total length, 151.1 (41); tail length, 58.6 (41); hind foot length, 20 (41); ear length from notch,14.6 (41); weight, 16.9 (41).

Specimens examined (44).—Floyd Co.: CCSP, UTM coordinates: 14 291349E 3790467N, 5; CCSP, UTM coordinates: 14 305151E 3793305N, 2; Briscoe Co.: CCSP, UTM coordinates: 14 309410E 3810025N, 1; CCSP, UTM coordinates: 14 310068E 3809982N, 6; CCSP, UTM coordinates: 14 310095E 3804148N, 1; CCSP, UTM coordinates: 14 310211E 3804323N, 3; CCSP, UTM coordinates: 14 310385E 3809862N, 2; CCSP, UTM coordinates: 14 310594E 3810455N, 2; CCSP, UTM coordinates: 14 310676E 3805340N, 8; CCSP, UTM coordinates: 14 310836E 3809760N, 1; CCSP, UTM coordinates: 14 310978E 3812685N, 2; CCSP, UTM coordinates: 14 311150E 3809408N, 9; Hall Co.: CCSP, UTM coordinates: 14 345566E 3820296N, 1; CCSP, UTM coordinates: 14 347057E 3820539N, 1.

Additional records (11).—Floyd Co.: Miriam Jowell Farm, 18 mi. N Lockney, 1; 1 mi. N, 10 mi. W Floydada, 5; 1 mi. S, 6 mi. E South Plains, 2; 1.5 mi. N, 3 mi. E South Plains, 2; Briscoe Co.: 6 mi. S, 4 mi. E Silverton, 1.

Peromyscus truei (Shufeldt, 1885)
Piñon Deermouse

In Texas, *Peromyscus truei* is found along the breaks of the Llano Estacado, as well as in the Guadalupe Mountains (Schmidly 2004). This mouse inhabits rocky areas composed of juniper and mesquite (Jones et al. 1987a; Yancey et al. 1996b; Schmidly 2004). At CCSP, this mouse commonly was found in rocky habitats with the following associated vegetation: *Juniperus pinchotii*, *Ziziphus obtusifolia*, *Prosopis glandulosa*, *Yucca* sp., *Bouteloua gracilis*, *Tridens* sp., and *Sporobolus* sp. The only other small mammal collected with *P. truei* at CCSP was *Peromyscus leucopus*. For a detailed description of the natural history and status of *P. truei* in the Texas Panhandle, see Yancey et al. (1996b).

Little is known about the reproductive cycle of *P. truei* (Schmidly 2004). Choate (1997) reported that the breeding season of this mouse probably extends from mid-February to mid-November. Litter sizes may range from one to six young (Hoffmeister 1981; Schmidly 2004). One gravid female was examined on 18 October (five embryos, crown-rump length 13). Testicular measurements of males from CCSP were: April, 10x5 to 10x7; July, 10x5 to 11x6; October, 5x3; and November, 5x3.

The subspecies of *P. truei* that occurs at CCSP is *P. t. comanche* Blair 1943. Mean external measurements (sample sizes and extremes in parentheses) of specimens from CCSP are as follows: total length, 185 (13, 160–219); tail length, 94 (13, 78–116); hind foot length, 22.7 (13, 22–24); ear length from notch, 20.8 (13, 20–22); weight, 18.6 (13, 11–29).

Specimens examined (15).—Briscoe Co.: CCSP, UTM coordinates: 14 307615E 3812830N, 4; CCSP, UTM coordinates: 14 307647E 3812665N, 4; CCSP, UTM coordinates: 14 309911E 3812688N, 2; CCSP, UTM coordinates: 14 309970E 3812696N, 2; CCSP, UTM coordinates: 14 311067E 3812579N, 1; CCSP, UTM coordinates: 14 311350E 3811487N, 2.

Additional records (62).—Briscoe Co.: 4.5 mi. N, 6 mi. W Silverton, 1; 6 mi. N 4 mi. W Silverton, 20; 8 mi. N, 2.5 mi. E Silverton, 1; CCSP, 3 mi. N Quitaque, 31; CCSP, 5 mi. N, 1 mi. W Quitaque, 6; 8 mi. N Quitaque, 3.

Reithrodontomys fulvescens J. A. Allen, 1984
Fulvous Harvest Mouse

Reithrodontomys fulvescens is found throughout eastern and central Texas, as well as portions of the Trans-Pecos (Schmidly 2004). This species generally prefers grassy and weedy habitats (Schmidly 1977,

1983, 2004; Spencer and Cameron 1982; Dalquest and Horner 1984; Jones et al. 1988). Spencer and Cameron (1982) reported that *R. fulvescens* also may be found in rocky outcrops. At CCSP, this harvest mouse was captured in grassland areas composed primarily of the following plants: *Prosopis glandulosa*, *Schizachyrium scoparium*, *Sporobolus cryptandrus*, *Calamovilfa gigantea*, *Aristida* sp., *Bouteloua* sp., and *Eragrostis* sp. Other small mammals collected with *R. fulvescens* at CCSP include: *Chaetodipus hispidus*, *Reithrodontomys megalotis*, *Peromyscus leucopus*, and *Onychomys leucogaster*.

Reithrodontomys fulvescens is reported to breed from February to October in Texas, however, reproduction reaches a peak in late spring and early autumn (Schmidly 2004). Litter sizes reportedly range from two to six young (Schmidly 1977, 1983, 2004; Spencer and Cameron, 1982). Spencer and Cameron (1982) noted that *R. fulvescens* may pair bond. No gravid females were collected from CCSP. One female, collected in April, was lactating. Testicular measurements of males from CCSP were 10x4 in February and 8x3 in April.

The subspecies of *R. fulvescens* found at CCSP is *R. f. laceyi* Allen, 1896. Mean external measurements (sample sizes and extremes in parentheses) for specimens from CCSP are as follows: total length, 152 (4, 144–161); tail length, 81.5 (4, 79–89); hind foot length, 19.3 (4, 19–20); ear length from notch, 13 (4, 12–14); weight, 8.3 (4, 6.4–9.3).

Specimens examined (4).—Floyd Co.: CCSP, UTM coordinates: 14 304503E 3790783N, 3; Briscoe Co.: CCSP, UTM coordinates: 14 309371E 3802661N, 1.

***Reithrodontomys megalotis* (Baird, 1858)**
Western Harvest Mouse

Reithrodontomys megalotis is found throughout West Texas (Schmidly 2004). It usually is found in grassy and weedy habitats (Webster and Jones 1982; Jones et al. 1988; Choate 1997; Schmidly 2004). Webster and Jones (1982) reported that this mouse also can be found in deserts, salt marshes, and forests. During this study, *R. megalotis* was captured commonly in grassland habitats composed mostly of *Prosopis glandulosa*, *Schizachyrium scoparium*, *Sporobolus cryptandrus*, *Calamovilfa gigantea*, *Aristida* sp., *Bouteloua* sp., and *Eragrostris* sp. Other small mammals collected with *R. megalotis* at CCSP include: *Perognathus flavus*, *Chaetodipus hispidus*, *Reithrodontomys fulvescens*, *Peromyscus attwateri*, *P. leucopus*, *P. maniculatus*, *Baiomys taylori*, *Onychomys leucogaster*, and *Mus musculus*.

Reithrodontomys megalotis generally breeds year-round under favorable conditions (Schmidly 1977, 2004; Webster and Jones 1982). Several litters of one to seven young are produced annually (Schmidly 1977, 2004; Webster and Jones 1982). One female, collected in February, carried four embryos (crown-rump length 18). Another female, collected in April, carried four embryos (crown-rump length 16). Lactating females were collected in February and May. Testicular measurements of males collected from CCSP were as follows: February, 4x2 to 8x5; March, 6x3; April, 6x4 to 7x5; May, 6x4 to 8x4; and November, 3x1 to 3x2.

The subspecies of *R. megalotis* that occurs at CCSP is *R. m. aztecus* Allen, 1893. Mean external measurements (sample sizes and extremes) for specimens from CCSP are as follows: total length, 131.4 (29, 114–150); tail length, 62.3 (29, 36–73); hind foot length, 17.1 (29, 16–19); ear length from notch, 12.9 (29, 10–15); weight, 9.4 (29, 4.7–17).

Specimens examined (29).—Floyd Co.: CCSP, UTM coordinates: 14 291349E 3790467N, 3; CCSP, UTM coordinates: 14 297852E 3789434N, 2; CCSP, UTM coordinates: 14 303525E 3790262N, 1; CCSP, UTM coordinates: 14 303929E 3790498N, 2; CCSP, UTM coordinates: 14 304503E 3790783N, 4; CCSP, UTM coordinates: 14 304588E 3791247N, 1; CCSP, UTM coordinates: 14 305689E 3794462N, 1; CCSP, UTM coordinates: 14 307003E 3797530N, 1; Briscoe Co.: CCSP, UTM coordinates: 14 308231N, 3800150N, 1; CCSP, UTM coordinates: 14 309371N 3802661N, 2; CCSP, UTM coordinates: 14 310676E 3805340N, 2; Hall Co.: CCSP, UTM coordinates: 14 321822E 3808037N, 7; CCSP, UTM coordinates: 14 325380E 3807957N, 2.

Additional records (13).—Floyd Co.: 1 mi. S, 6 mi. E South Plains, 2; 1.5 mi. N, 3 mi. E South Plains,

4; 6 mi. S Floydada, 1; 1 mi. N, 10 mi. W Floydada, 2; Briscoe Co.: 6 mi. S, 4 mi. E Silverton, 2; Hall Co.: 12 mi. W Lakeview, 2.

***Reithrodontomys montanus* (Baird, 1855)**
Plains Harvest Mouse

Reithrodontomys montanus is found throughout the western and central parts of Texas, east and southeast to Madison and Bexar counties, respectively (Schmidly 2004). Schmidly (1983) reported that this mouse may be expanding its range eastward in Texas. This harvest mouse generally prefers open grassland areas, as opposed to densely vegetated areas (Schmidly 1983, 2004; Dalquest and Horner 1984; Wilkins 1986; Jones et al. 1987a, 1987b, 1988; Goetze et al. 1996; Yancey et al. 1996a; Choate 1997). At CCSP, this species was captured in grassland areas with the following associated grasses: *Andropogon gerardii*, *Panicum virgatum*, *Tripsacum dactyloides*, *Sorghastrum nutans*, and *Sporobolus airoides*. Other small mammals collected at CCSP with *R. montanus* include *Chaetodipus hispidus* and *Baiomys taylori*.

Reithrodontomys montanus breeds year-round under favorable conditions (Schmidly 1983, 2004; Dalquest and Horner 1984; Wilkins 1986; Choate 1997). Litter sizes are reported to range from one to nine young (Schmidly, 1977, 1983, 2004; Dalquest and Horner 1984; Wilkins 1986; Goetze et al. 1996; Choate 1997). One gravid female from CCSP carried three embryos (crown-rump length 2). Testicular measurements of one male collected in May were 4x2.

The subspecies of *R. montanus* that occurs at CCSP is *R. m. griseus* V. Bailey, 1905. Mean external measurements (sample sizes and extremes in parentheses) of the Plains Harvest Mouse collected at CCSP are as follows: total length, 125.5 (2, 125–126); tail length, 56.5 (2, 54–59); hind foot length, 16 (2, 16); ear length from notch, 12 (2, 12); weight, 7.9 (2, 7.5–8.2).

Specimens examined (2).—Floyd Co.: CCSP, UTM coordinates: 14 304261E 3792048N, 1; Briscoe Co.: CCSP, UTM coordinates: 14 310836E 3809760N, 1.

Additional records (4).—Floyd Co.: 1 mi. S, 6 mi. E South Plains, 2; 1.5 mi. N, 3 mi. E South Plains, 1; Briscoe Co.: 4.5 mi. N, 6 mi. W Silverton, 1.

***Sigmodon hispidus* Say and Ord, 1825**
Hispid Cotton Rat

Sigmodon hispidus is found throughout Texas (Schmidly 2004). It prefers tall grassland communities with moderate to dense cover (Schmidly 1977, 2004; Goetze et al. 1996; Choate 1997). This cotton rat is reported to undergo extreme population fluctuations from year-to-year (Schmidly 1977, 1983, 2004; Cameron and Spencer 1981; Dalquest and Horner 1984; Choate 1997). At CCSP, this species was collected in areas composed primarily of the following grasses: *Andropogon gerardii*, *Panicum vergatum*, *Tripsacum dactyloides*, *Sorghastrum nutans*, and *Sporobolus airoides*. Johnson grass and mesquite trees were minor components of the plant communities. Other small mammals collected with *S. hispidus* at CCSP include: *Didelphis virginiana*, *Cryptotis parva*, *Chaetodipus hispidus*, *Peromyscus leucopus*, *P. maniculatus*, *Baiomys taylori*, *Neotoma micropus*, and *Mus musculus*.

Sigmodon hispidus reportedly breeds year round under favorable conditions (Schmidly 1977, 1983; Dalquest and Horner 1984; Goetze et al. 1996). Litter sizes range from one to 15 young (Schmidly 1977, 1983, 2004; Cameron and Spencer 1981; Dalquest and Horner 1984). During this study, pregnant females were examined on the following dates: 29 February (3 embryos, crown-rump length 9), 9 March (3 embryos, crown-rump length 11), 14 May (3 embryos, crown-rump length 5; 4 embryos, crown-rump length 54), 27 June (4 embryos, crown-rump length 27; 5 embryos, crown-rump length 40), 11 August (4 embryos, crown-rump length 33), 14 August (5 embryos, crown-rump length 8), 15 August (8 embryos, crown-rump length 10; 7 embryos, crown-rump length 5; 10 embryos, crown rump length 29; 5 embryos, crown-rump length 12; 6 embryos, crown-rump length 8), and 5 October (7 embryos, crown-rump length 7). Testicular measurements of males from CCSP were as follows: February, 15x9 to 20x10; March, 14x6; June, 10x3 to 20x8; July, 8x7 to 21x7; August, 10x8 to 21x7; and November, 8x3.

The subspecies of *S. hispidus* that occurs at CCSP is *S. h. berlandieri* Baird, 1855. Average external measurements (sample sizes and extremes in parentheses) of specimens from CCSP are as follows: total length, 256.1 (52, 168–303); tail length, 97.4 (52, 59–126); hind foot length, 32.2 (52, 25–39); ear length from notch, 17.4 (52, 13–19); weight, 98.7 (48, 21.5–185).

Specimens examined (53).—Floyd Co.: CCSP, UTM coordinates: 14 287174E 3789383N, 10; CCSP, UTM coordinates: 14 291349E 3790467N, 1; Briscoe Co.: CCSP, UTM coordinates: 14 308884E 3801479N, 1; CCSP, UTM coordinates: 14 309892E 3803638N, 3; CCSP, UTM coordinates: 14 310095E 3804148N, 1; CCSP, UTM coordinates: 14 310669E 3805456N, 2; CCSP, UTM coordinates: 14 310676E 3805340N, 1; CCSP, UTM coordinates: 14 310978E 3812685N, 2; CCSP, UTM coordinates: 14 313905E 3807502N, 3; Hall Co.: CCSP, UTM coordinates: 14 321822E 3808037N, 3; CCSP, UTM coordinates: 14 325366E 3807928N, 1; CCSP, UTM coordinates: 14 325885E 3808859N, 1; CCSP, UTM coordinates: 14 329231E 3814281N, 3; CCSP, UTM coordinates: 14 332582E 3815970N, 3; CCSP, UTM coordinates: 14 345566E 3820296N, 10; 14 347057E 3820539N, 4; CCSP, UTM coordinates: 14 359238E 3823546N, 1; CCSP, UTM coordinates: 14 360877E3824069N, 1; CCSP, UTM coordinates: 14 367816E 3824561N, 2.

Additional records. (2).—Briscoe Co.: CCSP, 3 mi. N Quitaque, 1; Hall Co.: 12 mi. W Lakeview, 1.

Family Erethizontidae
***Erethizon dorsatum* (Linnaeus, 1758)**
North American Porcupine

Erethizon dorsatum is found throughout the western one-half of Texas (Schmidly 2004). Although this species can be found in a variety of habitats, the porcupine prefers woodlands in rocky areas, as well as areas along ridges and slopes (Schmidly 2004). During this study, a single porcupine was observed in Floyd County approximately 5–8 km from the trailway, and it is considered to be rare in the area.

In Texas, this mammal generally mates from late summer to early fall (Schmidly 2004). A single young, rarely two, is born in April or May (Woods 1973; Schmidly 1977, 2004). No reproductive data specific to CCSP are available.

The subspecies of *E. dorsatum* that occurs at CCSP is *E. d. epixanthum* Brandt, 1835. No external measurements from CCSP are available.

Specimens examined (0).

Family Geomyidae
***Geomys bursarius* (Shaw, 1800)**
Plains Pocket Gopher

Geomys bursarius occurs throughout parts of north-central and northwestern Texas, including the Panhandle (Dalquest and Horner 1984; Schmidly 2004). This gopher favors areas of loose, sandy soils (Dalquest 1968; Schmidly 1983, 2004; Jones et al. 1988), and is reported to avoid dense clay soils as well as rocky or steep areas (Jones et al. 1987). At CCSP, *G. bursarius* was, in fact, taken from areas dominated by loose, sandy soils. Other small mammals collected with *G. bursarius* at CCSP include *Chaetodipus hispidus* and *Peromyscus maniculatus*.

Geomys bursarius generally breeds from late January through November, producing one (rarely two) litters per year that typically range in size from one to six (Schmidly 2004). In rare instances, gravid females have been known to carry up to eight embryos (Jones et al. 1988). All females collected from CCSP showed no evidence of reproductive activity. No reproductive information regarding males from CCSP is available.

The subspecies of *G. bursarius* that occurs at CCSP is *G. b. major* Davis, 1940. Mean external measurements (sample sizes and extremes in parentheses) for specimens from CCSP are as follows: total length, 237.7 (3, 230–246); tail length, 66 (3, 61–69); hind foot length, 29 (3, 27–30); ear length from notch, 5.7 (3, 5–6); weight, 164 (3, 152–175).

Specimens examined (3).—Floyd Co.: CCSP, UTM coordinates: 14 303948E 3790491N, 1; CCSP, UTM coordinates: 14 304554E 3791098N, 1; CCSP, UTM coordinates: 14 308891E 3801479N, 1.

Additional records (2).—Floyd Co.: 1 mi. S, 6 mi. E South Plains, 1; Briscoe Co.: 6.1 mi. N, 0.1 mi. W Quitaque, 1.

Family Heteromyidae
***Chaetodipus hispidus* (Baird, 1858)**
Hispid Pocket Mouse

Chaetodipus hispidus is distributed throughout Texas, except for the extreme southeastern part of the state (Schmidly 2004). This pocket mouse is reported to prefer sparse grasslands or prairies (Schmidly 1983, 2004; Dalquest and Horner 1984; Jones et al. 1987a; Paulson 1988; Stangl et al. 1992). However, some workers have reported the presence of this mouse in grassy and brushy vegetation (Jones et al. 1988; Paulson 1988). During this study, Hispid Pocket Mice were captured most commonly in grassland areas with the following associated grasses: *Bouteloua gracilis*, *Stipa leucotricha*, *Hilaria belangeri*, *Tridens muticus*, *Aristida* sp., *Bothriochloa barbinodis*, *Schizachyrium scoparium*, and *Sorghastrum nutans*. Other small mammals collected with *C. hispidus* at CCSP include: *Didelphis virginiana*, *Geomys bursarius*, *Perognathus flavus*, *Reithrodontomys megalotis*, *R. montanus*, *Peromyscus maniculatus*, *P. leucopus*, *Baiomys taylori*, *Neotoma micropus*, and *Sigmodon hispidus*.

Little is known regarding the reproductive cycle of *Chaetodipus hispidus* (Dalquest and Horner 1984; Jones et al. 1988; Paulson 1988). Litter size typically ranges from two to nine (Schmidly 1983, 2004; Paulson 1988). Schmidly (1983) reported that breeding most likely varies with geographic location. A summary of information regarding reproduction of this mouse is found in Choate and Jones (1989). Gravid females were examined on the following dates: 14 July (4 embryos, crown-rump 7); 31 July (5 embryos, crown-rump 4); and 14 August (5 embryos, crown-rump 8). Testicular measurements of males were as follows: January, 15x8; February, 4x2; May, 5x2 to 18x6; June, 8x3 to 9x4; July, 9x3 to 10x4; August, 7x3 to 15x8; and October, 7x3.

The subspecies of *C. hispidus* that occurs at CCSP is *C. h. paradoxus* (Merriam 1889). Mean external measurements (sample sizes and extremes in parentheses) of specimens from CCSP are as follows: total length, 195.0 (59, 150–234); tail length, 90.4 (59, 49–98); hind foot length, 25.0 (59, 21–29); ear length from notch, 10.7 (59, 7.5–14); weight, 32.2 (59, 13–59).

Specimens examined (38).—Floyd Co.: CCSP, UTM coordinates: 14 287174E 3789383N, 1; CCSP, UTM coordinates: 14 304261E 3792048N, 1; CCSP, UTM coordinates: 14 304503E 3790783N, 1; CCSP, UTM coordinates: 14 304554E 3791098N, 2; CCSP, UTM coordinates: 14 304588E 3791247N, 1; CCSP, UTM coordinates: 14 305151E 3798305N, 3; CCSP, UTM coordinates: 14 307397E 3798261N, 1; Briscoe Co.: CCSP, UTM coordinates: 14 308231E 3000150N, 1; CCPS, UTM coordinates: 14 309892E 3803638N, 2; CCSP, UTM coordinates: 14 309970E 3812696N, 1; CCSP, UTM coordinates: 14 310286E 3804352N, 2; CCSP, UTM coordinates: 14 310509E 3810350N, 1; CCSP, UTM coordinates: 14 310609E 3805456N, 1; CCSP, UTM coordinates: 14 310836E 3809760N, 2; CCSP, UTM coordinates: 14 311150E 3809408N, 3; CCSP, UTM coordinates: 14 314853E 3808126N, 5; CCSP, UTM coordinates: 14 317055E 3828361N, 1; Hall Co.: CCSP, UTM coordinates: 14 325366E 3807928N, 2; CCSP, UTM coordinates: 14 325885E 3808859N, 1; CCSP, UTM coordinates: 14 330973E 3815297N, 1; CCSP, UTM coordinates: 14 337754E 3817CCSP, UTM coordinates: 14 345566E 38205296N, 1; CCSP, UTM coordinates: 14 347057E 3820539N, 1; CCSP, UTM coordinates: 14 352731E 3821611N, 2; CCSP, UTM coordinates: 14 367816E 3824756N, 1.

***Perognathus flavus* Baird, 1855**
Silky Pocket Mouse

Perognathus flavus is found throughout the western two-thirds of the state (Schmidly 2004). This pocket mouse is known to inhabit a variety of habitats (Best and Skupski 1994; Schmidly 2004), but generally prefers areas of short, sparse grasses (Schmidly 1977, 1983; Dalquest and Horner 1984; Jones et al. 1988; Goetze et al. 1996). At CCSP, this species was captured most commonly in short to medium grassland areas composed of the following grasses: *Schizachyrium scoparium*, *Sporobolus cryptandrus*, *Calamovilfa gigantea*, *Aristida* sp., *Bouteloua* sp., and *Eragrostris* sp. Mesquite (*Prosopis glandulosa*) was a minor component of the plant communities. Other mammals collected with *P. flavus* at CCSP include: *Chaetodipus hispidus*, *Reithrodontomys megalotis*, *Peromyscus leucopus*, and *Baiomys taylori*.

Perognathus flavus generally breeds from early spring to late fall, and produces two or more litters per

year (Schmidly 1977, 1983, 2004). Litter sizes may vary from one to six young (Schmidly 1977, 1983, 2004; Dalquest and Horner 1984; Best and Skupski 1994). All females from CCSP showed no evidence of reproductive activity. Testicular measurements of males were 6x4 in March and 3x2 to 5x2 in June.

The subspecies of *P. flavus* that occurs at CCSP is *P. f. flavus* Baird, 1855. Mean external measurements (sample sizes and extremes in parentheses) for specimens from CCSP are as follows: total length, 110 (7, 103–115); tail length, 49.1 (7, 37–54); hind foot length,15.7 (7, 15–17); ear length from notch, 5.4 (7, 4–7); weight, 6.8 (7, 5.5–8.5).

Specimens examined (7).—Floyd Co.: CCSP, UTM coordinates: 14 307003E 3797530E, 1; Briscoe Co.: CCSP, UTM coordinates: 14 309970E 3812696N, 2; CCSP, UTM coordinates: 14 310321E, 3810652N, 1; Hall Co,: CCSP, UTM coordinates: 14 326951E 3810822N, 1; CCSP, UTM coordinates: 14 336533E 3817104N, 1; CCSP, UTM coordinates: 14 337754E 3817207N, 1.

Additional records (1).—Briscoe Co.: 8 mi. N Quitaque, 1.

Family Muridae
***Mus musculus* (Linnaeus, 1758)**
House Mouse

Mus musculus is found throughout Texas (Schmidly 2004). This non-native mouse is known to be highly commensal with humans (Dalquest 1968; Schmidly 1983, 2004; Dalquest and Horner 1984; Jones et al. 1987a, 1988; Goetze et al. 1996). When not living in close contact with humans, *M. musculus* prefers grassy and weedy areas (Schmidly 1977; Dalquest and Horner 1984; Goetze et al. 1996). At CCSP, this species was collected in areas that were within a 1.6 km radius of human structures. The vegetation of the surrounding area was composed of the following grasses: *Schizachyrium scoparium*, *Sporobolus cryptandrus*, *Calamovilfa gigantea*, *Aristida* sp., *Bouteloua* sp., *Eragrostis* sp. Other small mammals collected at CCSP with *M. musculus* include: *Chaetodipus hispidus*, *Reithrodontomys megalotis*, *Peromyscus maniculatus*, and *Sigmodon hispidus*.

Mus musculus breeds year-round, however, reproductive activity peaks from spring to late fall (Schmidly 1983). Several litters (up to 13) of two to 15 young may be produced yearly (Schmidly 1977, 1983, 2004; Dalquest and Horner 1984). Gravid females from CCSP were examined in August (4 embryos, crown-rump length 17; 4 embryos, crown rump length 5), and October (3 embryos, crown-rump length 2). One lactating female was collected in August. Testicular measurements of males from CCSP were as follows: August, 4x5 to 10x5; September, 3x1; and November, 4x2.

The systematics of *M. musculus* is in need of review. Mean external measurements (sample sizes and extremes in parentheses) for specimens from CCSP are as follows: total length, 157.1 (16, 98–178); tail length, 71.6 (16, 30–80); hind foot length, 18.3 (16, 13–20); ear length from notch, 11.8 (16, 8–15); weight, 14.5 (16, 7–23.5).

Specimens examined (16).—Floyd Co.: CCSP, UTM coordinates: 14 287174E 3789383N, 10; Briscoe Co.: CCSP, UTM coordinates: 14 310095E 3804148N, 1; CCSP, UTM coordinates: 14 310676E 3805340N, 1; CCSP, UTM coordinates: 14 311150E 3809408N, 1; Hall Co.: CCSP, UTM coordinates: 14 321822E 3808037N, 1; CCSP, UTM coordinates: 14 325380E 3807957N, 2.

Family Sciuridae
***Cynomys ludovicianus* (Ord, 1815)**
Black-tailed Prairie Dog

Cynomys ludovicianus is known to have occurred throughout the western one-half of Texas, north of the Rio Grande Plain. This prairie dog now is extirpated from much of its former range (Schmidly 2004). It tends to favor short grass prairies, and typically avoids heavy brush as well as tall grass (Schmidly 2004). At CCSP a moderately-sized prairie dog town was documented visually near the equestrian camp ground. The colony was situated in a somewhat disturbed area of mixed short grasses. This colony was not present in 1996–1997 when intensive fieldwork for this study occurred. It was documented on a trip in July 2014 to assess habitats. Apparently these animals have been

introduced (or reintroduced), or naturally expanded their range into the park.

Each year, a single litter of pups is produced in March or April. Litters typically consist of four to five young, but have been known to consist of as many as 10. No reproductive information for the prairie dogs specific to CCSP is available.

The subspecies of *C. ludovicianus* that occurs at CCSP is *C. l. ludovicianus* Ord (1815). No measurements for the Black-tailed Prairie Dog from CCSP are available.

Specimens examined (0).

***Xerospermophilus spilosoma* Bennett, 1833**
Spotted Ground Squirrel

Xerospermophilus spilosoma is found throughout the western one-half of Texas, as well as on the Rio Grande Plain (Schmidly 2004). This ground squirrel generally prefers areas associated with sandy soils (Streubel and Fitzgerald 1978; Jones et al. 1988; Stangl et al. 1992; Schmidly 2004). Vegetation preferences range from short, sparse cover to tall, heavy cover (Schmidly 1977, 2004; Streubel and Fitzgerald 1978; Dalquest and Horner 1984). During this study, two spotted ground squirrels were collected in the equestrian area of CCSP with the following associated grasses: *Schizachyrium scoparium*, *Andropogon gerardii*, *Panicum virgatum*, *Sporobolus cryptandrus, S. giganteus*, *Calamovilfa gigantea*, and *Aristida* sp.

In Texas, the breeding biology of *X. spilosoma* is not well known. Breeding probably extends from February to mid-July (Schmidly 2004). Schmidly (1977, 2004) reported that this species may produce two litters a year. Two gravid females, collected in May from CCSP, were examined. One carried seven embryos (crown-rump length 24), and the other carried six embryos (crown-rump length 10). No reproductive information for males from CCSP is available.

The subspecies of *X. spilosoma* found at CCSP is *X. s. marginatus* V. Bailey, 1890. Mean external measurements (sample sizes and extremes in parentheses) of specimens from CCSP are as follows: total length, 245.5 (2, 245–246); tail length, 90.5 (2, 90–91); hind foot length, 32 (2, 31–33); ear length from notch, 11.5 (2, 11–12); weight, 152.5 (2, 145–160).

Specimens examined (2).— Briscoe Co.: CCSP, UTM coordinates: 14 311205E 3813045N, 2.

Species of Postulated Occurrence

In addition to the documented species noted above, it is probable that several other species of mammals inhabit CCSP. The following species have distributional limits in the vicinity of the park or are known from the general area. However, during the course of this study, these animals were neither observed nor collected.

ORDER LAGOMORPHA
Family Leporidae
***Lepus californicus* Gray, 1837**
Black-tailed jackrabbit

Lepus californicus is found throughout Texas, except for the Big Thicket region (Schmidly 2004). It has been reported from the northern Texas Panhandle (Jones et al. 1988), and is known from Bricoe County (Schmidly 2004) as well as nearby Motley, Dickens (Howell et al. 2009), and Floyd (Schmidly 2004) counties.

ORDER SORICOMORPHA
Family Soricidae
***Notiosorex crawfordi* (Coues, 1877)**
Crawford's Desert Shrew

Notiosorex crawfordi is known from the western two-thirds of Texas (Schmidly 2004). This desert shrew most likely is distributed throughout the Trans-Canadian region (Manning et al. 2008), as well as the Llano Estacado (Choate 1997). It has a limited distribution in north-central Texas (Dalquest and Horner 1984). *Notiosorex crawfordi* has been reported from Briscoe County (Schmidly 2004).

ORDER CHIROPTERA
Family Molossidae
***Nyctinomops macrotis* (Gray, 1839)**
Big Free-tailed Bat

Nyctinomops macrotis is found in isolated locations throughout the Trans-Pecos and Panhandle during seasonal migration (Schmidly 2004; Ammerman et al. 2012). It is known to occur on the Llano Estacado (Choate 1997).

Family Vespertilionidae
***Antrozous pallidus* (Le Conte, 1856)**
Pallid Bat

Antrozous pallidus is known from the western one-half of Texas (Schmidly 2004; Ammerman et al. 2012). Choate (1997) reported that the pallid bat occurs in the northern section of the Llano Estacado. This relatively common species has been reported to inhabit areas affiliated with the Canadian River (Jones et al. 1988). The Pallid Bat also has been reported to occur in north-central Texas (Jones et al. 1987a). This species is known from Briscoe County (Schmidly 2004).

***Lasionycteris noctivagans* (Le Conte, 1831)**
Silver-haired Bat

Lasionycteris noctivagans has a broad, but erratic distribution throughout Texas (Schmidly 1994; Ammerman et al. 2012). Manning et al. (2008) reported that this migratory species is found throughout Texas during the spring and fall. Infrequent records of this species exist from the Llano Estacado (Choate 1997) and Texas Panhandle (Demere et al. 2012).

***Lasiurus borealis* (Muller, 1776)**
Eastern Red Bat

Lasiurus borealis can be found throughout Texas during migration (Schmidly 2004; Ammerman et al. 2012). Manning et al. (2008) reported that some Eastern Red Bats probably over-winter in Texas. This bat is common in some areas of north-central Texas (Dalquest and Horner 1984) and the Llano Estacado (Choate 1997). Records have been reported from the Trans-Canadian region of the Panhandle (Manning et al. 2008).

***Lasiurus cinereus* (Palisot de Beauvais, 1796)**
Hoary Bat

Lasiurus cinereus is a migratory species found throughout Texas (Schmidly 2004; Ammerman et al. 2012). This bat occurs commonly in parts of the Llano Estacado where suitable habitat exists (Choate 1997). Two specimens from the northern Texas Panhandle have been reported. These records most likely represent migratory individuals (Jones et al. 1988). Hoary Bats have been recorded previously from Floyd and Briscoe counties (Schmidly 2004).

***Myotis velifer* (J. A. Allen, 1890)**
Cave Myotis

Myotis velifer is found throughout much of western Texas, and extends into southern and central Texas (Schmidly 2004; Ammerman et al. 2012). This bat has been documented from nearby localities in Briscoe, Hall, Motley, and Dickens counties (Howell et al. 2009).

***Parastrellus hesperus* (H. Allen, 1864)**
American Parastrelle

Parastrellus hesperus is distributed throughout western Texas (Schmidly 2004; Ammerman et al. 2012). This bat is known to inhabit regions of the Llano Estacado (Choate 1997) and north-central Texas (Dalquest and Horner 1984). American Parastrelles have been documented from Garza, Briscoe, and Floyd counties (Schmidly 2004).

***Perimyotis subflavus* (F. Cuvier, 1832)**
American Perimyotis

Perimyotis subflavus was traditionally distributed throughout the eastern one-half of Texas onto the Rolling Plains, south through portions of central Texas (Schmidly 2004; Ammerman et al. 2012). Recent records indicate a westward range expansion onto the Panhandle (Demere et al. 2012).

ORDER CARNIVORA
Family Canidae
***Urocyon cinereoargenteus* (Schreber), 1775**
Common Gray Fox

Urocyon cinereoargenteus is found throughout Texas, but is undocumented from some areas of the Panhandle (Schmidly 2004). Jones et al. (1988) reported that this species probably is rare in the Trans-Canadian region of Texas, whereas, Choate (1997) reported that it most likely is found throughout the Llano Estacado in suitable habitat.

***Vulpes velox* (Say, 1823)**
Swift Fox

Vulpes velox is distributed through the western one-third Texas, east to Menard County (Schmidly 2004). This fox appears to be fairly common on the flat plains of the Trans-Canadian region (Jones et al. 1988) and portions of the Llano Estacado (Choate 1997). The Swift Fox has been reported to occur in Floyd County (Schmidly 2004).

***Vulpes vulpes* (Linneaus, 1758)**
Red Fox

Having been introduced into the eastern and central parts of Texas, *Vulpes vulpes* is now distributed from the eastern part of the state to the central Trans-Pecos (Schmidly 2004). On the Llano Estacado, it is known from a limited area along the eastern edge of the plateau (Choate 1997). The Red Fox is known to occur in Floyd County (Schmidly 2004).

Family Felidae
***Puma concolor* (Linnaeus, 1771)**
Mountain Lion, Cougar, or Puma

Puma concolor previously was known to occur throughout Texas. Currently it is known for certainty from the Trans-Pecos, western Edwards Plateau, and southern Rio Grande Plains regions of the state (Schmidly 2004). Given an historical record from Hall County (Schmidly 2004), it is likely that the Mountain Lion occurs in or near CCSP.

Family Mephitidae
***Spilogale putorius* (Linnaeus, 1758)**
Eastern Spotted Skunk

Spilogale putorius is found in the eastern half of Texas east of the Balcones Escarpment, west through north-central Texas to the Panhandle and south to Garza County (Schmidly 2004). This skunk is found throughout north-central Texas (Dalquest and Horner 1984), but is uncommon in the Trans-Canadian region (Jones et al. 1988) and on the Llano Estacado (Jones et al. 1988; Choate 1997).

Family Mustelidae
***Mustela frenata* Lichtenstein, 1831**
Long-tailed Weasel

Mustela frenata is found throughout Texas, except for the extreme northern Panhandle (Schmidly 2004). This weasel is fairly common in some areas of the Llano Estacado (Choate 1997).

***Taxidea taxus* (Schreber, 1778)**
American Badger

Taxidea taxus is found across Texas, except for the extreme eastern part of the state (Schmidly 2004). This species is reported to be widespread in the Trans-Canadian region of the state (Jones et al. 1988), north-central Texas (Dalquest and Horner 1984), and the Llano Estacado (Choate 1997). It is known from the general CCSP area, including localities in Briscoe (Haynie et al. 2005), Motley, and Dickens (Howell et al. 2009) counties.

Family Procyonidae
***Bassariscus astutus* (Lichtenstein, 1830)**
Ringtail

Bassariscus astutus is found throughout Texas (Schmidly 2004). A few specimens are known from the Llano Estacado (Choate 1997), and the Ringtail has been documented from Briscoe County (Schmidly 2004).

ORDER ARTIODACTYLA
Family Cervidae
***Odocoileus virginianus* (Zimmermann, 1780)**

Odocoileus virginianus is known to occur throughout the state of Texas in brushy or wooded areas (Schmidly 2004), and therefore likely occurs in or near CCSP.

ORDER RODENTIA
Family Cricetidae
***Microtus ochrogaster* (Wagner, 1842)**
Prairie Vole

Historically, the distribution of *Microtus ochrogaster* in Texas was thought to be restricted to the extreme northern part of the Panhandle, particularly Hansford and Lipscomb counties (Schmidly 2004). However, recently Poole and Matlock (2007) documented the presence of *M. ochrogaster* in Armstrong and Ochiltree counties, and Roberts et al. (2015) recorded this vole from Lubbock County. These recent records have revealed that this vole's range in the Panhandle is much more extensive than previously thought, particularly in a southerly direction that extends through CCSP. Additional trapping in the grassland habitats of CCSP may divulge the presence of the Prairie Vole within the park.

Family Geomyidae
***Cratogeomys castanops* (Baird, 1852)**
Yellow-faced Pocket Gopher

Cratogeomys castanops ranges throughout the western one-third of Texas, from the Panhandle south to Val Verde County, continuing along the Rio Grande to the southernmost tip of Texas (Hollander 1990; Schmidly 2004). It is known to inhabit most of the northern Texas Panhandle (Jones et al. 1988) and parts of the Llano Estacado where suitable habitat occurs (Choate 1997). This species has been recorded previously from Floyd County (Schmidly 2004).

Family Heteromyidae
***Dipodomys ordii* Woodhouse, 1853**
Ord's Kangaroo Rat

Dipodomys ordii is distributed throughout the western and southern parts of Texas (Schmidly 2004). This species has been reported to be common in the Trans-Canadian region (Jones et al. 1988), the western part of north-central Texas (Dalquest and Horner 1984; Jones et al. 1987a), and the Llano Estacado (Choate 1997). *D. ordii* has been reported from Floyd, Briscoe, and Hall counties (Schmidly 2004).

***Perognathus flavescens* Merriam, 1889**
Plains Pocket Mouse

Perognathus flavescens is known from El Paso County, the High Plains, and adjacent areas in northwestern Texas (Schmidly 2004). Jones et al. (1988) reported that this species has a patchy distribution throughout the northern Texas Panhandle in its preferred habitat. It has been found over a large part of the Llano Estacado (Choate 1997).

***Perognathus merriami* J. A. Allen 1892**
Merriam's Pocket Mouse

Perognathus merriami occurs throughout much of west Texas, including the southern portion of the Panhandle (Schmidly 2004). Its occurrence has been documented in Briscoe (Schmidly 2004) and Hall (Howell et al. 2009) counties.

Family Muridae
***Rattus norvegicus* (Berkenhout, 1769)**
Norway Rat or Brown Rat

Rattus norvegicus is found throughout Texas (Schmidly 2004). This species is reported to be present in the northern Texas Panhandle near human habitations (Jones et al. 1988), as well as in north-central Texas (Dalquest and Horner 1984).

***Rattus rattus* (Linnaeus, 1758)**
Black Rat

Rattus rattus is distributed throughout most of Texas in urban settings (Schmidly 2004). It has been reported from north-central Texas (Dalquest and Horner 1984; Jones et al. 1987a).

Family Sciuridae
***Ictidomys parvidens* (Erxleben, 1777)**
Rio Grande Ground Squirrel

Ictodomys parvidens inhabits much of the western and southern portions of Texas (Schmidly 2004). This ground squirrel reaches its northern distributional limits in the Panhandle near CCSP (Schmidly 2004).

***Ictidomys tridecemlineatus* (Mitchill, 1821)**
Thirteen-lined Ground Squirrel

Ictidomys tridecemlineatus is distributed throughout northern Texas and along a corridor extending through north-central Texas (Schmidly 2004). This ground squirrel inhabits the Texas Panhandle (Jones et al. 1988) and is known from the Llano Estacado (Choate 1997). The Thirteen-lined Ground Squirrel has been reported from Floyd and Briscoe counties (Schmidly 2004).

***Sciurus niger* (Linneaus, 1758)**
Eastern Fox Squirrel

Sciurus niger is distributed throughout the eastern three-quarters of Texas (Schmidly 2004). This squirrel has been documented from much of the Panhandle, including north and south of CCSP (Jones et al. 1988; Schmidly 2004).

CONCLUSIONS

Thirty-six species of mammals were observed and/or collected from CCSP. In addition, it is plausible that 29 species not detected in this study inhabit the park, based upon their overall distributional patterns. As much of the surrounding habitat is farm and grazing lands, numerous small mammals seem to be thriving in the relatively undisturbed habitats found throughout the park and trailway. Moreover, the trailway may serve as a corridor of movement between the High Plains and the Rolling Plains for certain small mammals (Yancey and Jones 1997). This corridor may allow for the expansion of distributional ranges for various species.

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Prior to the initial submission of this manuscript for review, the senior author and leader of this project (Jones) met with an untimely death. The coauthors (Yancey and Manning) subsequently put the final touches on the manuscript, submitted it, and shepherded it through the revisionary process.

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Addresses of authors:

CLYDE JONES *(Deceased)*

Museum of Texas Tech University
Texas Tech University
Lubbock, TX 79409-3191

FRANKLIN D. YANCEY, II

Oakhurst Center
Reedley College
40241 Hwy 41
Oakhurst, CA 93644
frank.yancey@scccd.edu

RICHARD W. MANNING

107 LBJ Cove
San Marcos, TX 78666-2530
Rwmanning@Grandecom.net

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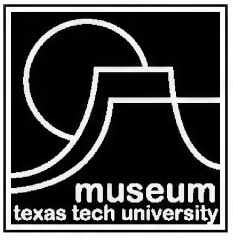

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